are seeking for the truth, and if they are successful both are adding to the sum of human knowledge.

They differ, as it seems to me, principally in this: First, the researches of the applied chemists being largely made in the interests of corporations or manufacturing establishments, the results of these investigations in many cases are not at once available to the world, except in so far as they lead to diminish cost of production. Those who have paid for these researches naturally feel that they should be allowed a period of time at least to recoup themselves for their expenditures, and so they protect themselves either by patents or secrecy. But this is only a knowledge of the truth deferred. Sooner or later the results of the investigations of all applied chemists are added to the great body of accumulated chemical knowledge. The pure chemist, on the other hand, at once gives the results of his investigations to the world, and is quite content if the publication of his researches shall bring him as his reward a modicum of appreciation from his fellows. Second, in their original work, the pure chemists differ from the applied chemists in the ulterior purpose for which the investigation is undertaken. As has already been stated, the applied chemist usually undertakes an investigation, tries to find new truth with the avowed purpose of at once utilizing this truth as soon as it is found. Not so the pure chemists. The problems which they attack and solve so successfully have no necessary relation to subsequent utility. The truth which they discover and put on record may be found to be useful at some time, but its possible immediate utility or non-utility is not taken into consideration by the pure chemist, either in his choice of a subject for investigation or in the prosecution of his work. The truth for the truth's own sake is his motto and guiding star.

If we have diagnosed the case correctly, then, the principal differences between the pure and the applied chemist are that the latter withholds the results of his work from the world for a period of time, while the former gives his at once, and that the latter is, in his original work, seeking for truth that is useful as soon as it is worked out, while the former neither knows nor cares whether the truth that he discovers is either now or at any future time turned to practical or useful effect. Let me not be misunderstood. I am not attempting to belittle in any sense the work of the pure chemists. They are worthy of all honor and respect. But, on the other hand, I am not at all willing to have the work of the applied chemists made light of, or treated as though it were in an inferior field. To my mind there is no occasion for either to belittle the work of the other. The field of chemistry is so broad, the amount of unoccupied ground in every branch of the science is so great, that there is neither time nor energy for struggling as to who is greatest or who is least, but in whatever line a man's tastes, opportunities or the force of circumstances may lead him, whether as a pure or an applied chemist, whether organic or inorganic, whether theoretical, physical or agricultural, whether analytical or synthetic, provided in his mind at all times the love of truth is above all, and honest work is being done, he is worthy of recognition, honor and respect.

C. B. Dudley.

Altoona.

THE AMERICAN MORPHOLOGICAL SOCIETY.

The eighth annual meeting of the American Morphological Society was held at Cornell University, Ithaca, N. Y., December 28th, 29th and 30th. The following new members were elected: Professor J. H. Comstock, Cornell University; Mr. Ulric Dahlgren, Princeton University; Professor

Pierre Fish, Cornell University; Miss Catharine Foot, Evanston, Ill.; Mrs. S. P. Gage, Cornell University; Professor S. H. Gage, Cornell University; Professor C. W. Hargitt, Syracuse University; Dr. B. F. Kingsbury, Cornell University; Professor E. W. McBride, McGill University; Dr. P. C. Mensch, Ursinus College; and Professor A. D. Morrill, Hamilton College.

The following papers were presented and discussed:

On Reading the Records of Evolution in the Wings of Insects. J. H. COMSTOCK.

THIS was an illustration of a method of taxonomic work outlined by the writer several years ago in an essay entitled 'Evolution and Taxonomy,' where he urged a more constant use of the theory of evolution than is customary in work of this kind. It was suggested that, as the structure of a highly organized animal or plant is too complicated to be understood in detail at once, the student begin with the study of a single organ possessed by the members of the group to be classified, and determine its primitive form and the various ways in which this has been modified. The data thus obtained will aid in making a *provisional* classification of the group, which should be confirmed or corrected by a similar study of other organs.

The illustration given in this paper was an effort to obtain data bearing on the working-out of the phylogeny of the orders of winged insects, by a study of the characters presented by the venation of the wings, the homologies of the *anlagen* of the winged-veins, *i. e.*, the tracheæ that precede them in nymphs or pupæ, were determined, and a hypothetical type representing the arrangement of the tracheæ in the nymph of the stem form of winged insects was figured. It was then shown how this type has been modified in the different lines of descent; in some by a reduction in the number of wing-veins by a coalescence of adjacent veins; in others by the development secondarily of supernumary veins. Each of these processes can be observed by a study of the ontogeny of certain species representing the line of development in which it occurs, and also by a study of allied forms in which it has taken place in varying degrees.

The Records of Evolution in the Wings of Dragon-Flies. J. G. NEEDHAM.

THIS paper furnished a concrete illustration of the method outlined in the preceding one. The adult dragon-fly wing was compared with the typical insect wing and was seen to differ widely from it, but the arrangement of the tracheæ in the budding wing of a young nymph was shown to be nearly that of the type. The development of the complex adult venation was then traced in the development of the tracheæ of the nymph, and it was seen that these tracheæ show what was the primitive condition of every feature of the venation.

The *triangle* was selected for an illustration of the reading of the dragon-fly record, and it was shown that primitively this differed little from an ordinary rectangular oreole, while with the adaptation of it to the bracing of the basal part of the wing every part of it has been modified along certain definite lines, which can be clearly traced. Some of these lines of development were illustrated by series of figures. It is stated that the *triangle* is but one of many correlated wing characters, that specialization has taken place along many different lines, and that almost every wing has preserved in some of its parts a bit of the ancestral record. In conclusion, attention was called to the greater value of conclusions based on a true genealogic study of a single organ than of those based on the mere assortment of characters at large.